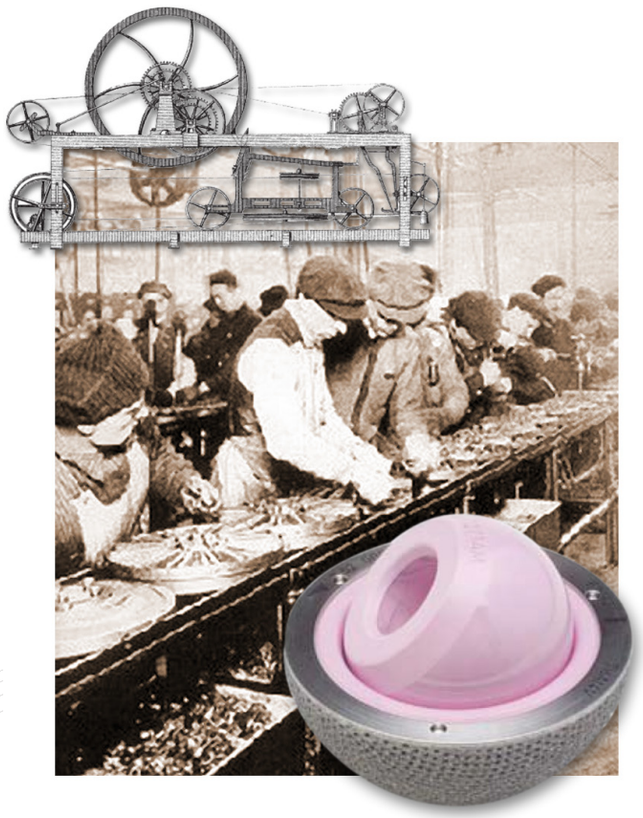
Additive Manufacturing

Globally, emerging manufacturing technologies are driving what some have called the "third industrial revolution." The U.S. has established the Advanced Manufacturing Partnership (AMP) to invest in the technologies and skills that will support a dynamic domestic advanced manufacturing sector that creates high-quality jobs and encourages companies to invest in the United States.

One of these technologies, additive manufacturing, is not actually new, having existed in some form since the 1970s. However, recent advances in sensors, micromechanics, computational modeling and simulation, and materials have accelerated this technology, making it more mainstream. Need is also driving innovation, as additive manufacturing could help move manufacturing processes back "on shore."

According to one consulting firm, the additive manufacturing industry is expected to surpass $6.9 billion by 2019, mostly for part production. The economic impacts are profound. As off-shoring to reduce labor costs becomes less attractive, manufacturing will return to where the products are sold and used. Environmental impacts compared with "subtractive" processes are minimal. Shipping costs can be minimized. The role of the manufacturer might completely change. Additive manufacturing supply centers could emerge, where a part based on a design by any number of companies in any sector is electronically delivered to the supply center, which simply fabricates it for the customer.

The technology also has transformative national security implications. As complex parts become easier to build, and the equipment and skills needed to build them become ubiquitous, individuals and countries could conceivably produce technologies, including weapons, never before possible.



Mule Jenny (1835), Illustrations from the History of the Cotton Manufacture in Great Britain, Pub. H. Fisher, R. Fisher, and P. Jackson; Ford assembly line (1913) Wikipedia; Multi material, implantable medical device, EuroCoating, 2012, http://www.eurocoating.it/company/default.aspx

Additive manufacturing changes everything: how things are made, who makes them, where they are made, and even what is made.

[1]The third industrial revolution - The digitisation of manufacturing will transform the way goods are made—and change the politics of jobs too, April 21st 2012, The Economist

[2]3-D printing could remake U.S. Manufacturing, USA Today, 7/10/2012

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